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APPROVAL SIGNATURES		DATE
Nelson Keeler (original signature on file)	Director	10/17/2005

REVISION HISTORY			
Rev. No.	Description of Change	Author	Effective Date
Basic	Initial release to replace Ames QM	Siamak Yassini IT/332	09/09/1999
A	Reflect transition to GSFC	Bill Jackson 307/215	05/07/2001
B	Reflect relationship between IV&V and GSFC; reflect deletion of IVV 07 and 08	Greg Blaney 307/387	07/09/2001
C	Reflect changes throughout the entire ISO SLPs, WIs, and documentation processes	Greg Blaney 307/387	03/27/2003
D	Updated process coverage chart and document references.	Greg Blaney 307/387	09/24/2003
E	Updated organizational charts to reflect IV&V's new "Code 100" attachment to Goddard Space Flight Center.	Greg Blaney 180	03/11/2004
F	Updated sections 12.1 and 12.4 (verbiage update), references to NPG to be NPR, and a ref. in sec. 9.1 to 09-4.	Greg Blaney 180	05/25/2004
G	Updated to include three pillars in the quality process and incorporate new procedures into the IMS	Greg Blaney 180	10/20/2005

REFERENCE DOCUMENTS	
Document Number	Document Title
Form 1009	Waiver Request and Approval
NPD 1280.1	NASA Management System Policy

REFERENCE DOCUMENTS	
Document Number	Document Title
NPD2820.1C	NASA Software Policy
NPR 1441.1	NASA Records Retention Schedule
Implementation Plan	NASA IV&V Implementation Plan 2005-2010
IVV ALL	All IVV ISO SLPs and WIs

Table of Contents

1.0 Purpose

This document defines the manner in which the NASA IV&V Facility implements the NASA IV&V Facility Management System (IMS). The IMS establishes process guidelines through System Level Procedures (SLPs), Work Instructions (WIs), and forms to ensure that customers receive the highest quality products and services.

1.1 Quality Policy

The Quality Policy of the NASA IV&V Facility is:

"To provide superior quality products and services, through continuous improvement, that meet or exceed customer requirements"

The NASA IV&V Facility's quality policy applies to the IMS, and management and organizational processes employed to achieve the NASA IV&V Facility's strategic goals and objectives.

1.1.1 IMS

Strategic goals and objectives can only be achieved by operating a comprehensive, coordinated quality management system that ensures the quality of all products, processes, and services offered by the NASA IV&V Facility. This quality management system is the IMS. The IMS is designed to meet the requirements of International Organization for Standardization (ISO) 9001:2000 Standard and shall be implemented across the NASA IV&V Organization. The IMS shall encompass all of the activities that affect the products and services provided to customers.

1.1.2 Management

The NASA IV&V Facility Director and senior managers are committed to ensuring that the IMS is effective in achieving quality and continuously satisfying customers and stakeholders. The NASA IV&V Facility shall continually improve products, processes, and quality management methods. Quality objectives shall be established, measured against, and reported. Measurement

objectives shall be established and measured. To ensure organizational goals are achieved, Metrics Owners shall collect and analyze metrics, and report the analysis at the Quarterly Management Review (QMR). Financial costs associated with these objectives shall be attributed wherever possible.

1.1.3 Organization

To foster a culture of continuous improvement, the NASA IV&V Facility shall continue to recognize and reward effective teamwork and individual achievement, and shall review its products and processes regularly. Investing in personnel and emphasizing training are testaments to the NASA IV&V Facility's commitment to quality.

1.2 Quality Objectives

The IMS-supported quality objectives described in this document promote the strategic goals and objectives established in the NASA IV&V Facility Implementation Plan. The quality objectives identified in this document relate to providing quality products and services to NASA IV&V Facility customers.

SLPs, WIs, and forms have been developed and documented to standardize the planning, performance, control, and measurement of technical work. SLPs and WIs have also been developed to enable management to create, maintain, monitor, measure, and improve upon all processes and procedures that compose the IMS. The relationships between the NASA IV&V Facility's procedures and the ISO requirements will be identified and discussed later in this document.

The objectives that the IMS facilitates, as documented in the NASA IV&V Facility Implementation Plan, are:

A. Deliver and institutionalize high quality IV&V services throughout NASA.
B. Be acknowledged as the preeminent leader in IV&V expertise, tools, and processes.

C. Be internationally acknowledged for leading and conducting research that directly contributes to higher software assurance and improved IV&V practices.
D. Establish an organizational culture that engages and rewards employees and cultivates their loyalty and commitment to the NASA IV&V Organization.
E. Ensure a continual focus on external and internal customer service that is second to none.
F. Practice continued quality improvement, compliance, and innovation throughout the NASA IV&V Facility.
G. Advance the NASA IV&V Facility's vision and mission by managing the use of existing resources, collaborating with others, and planning future growth.
H. Be an active community partner through outreach, educational activities, and proactive service.
I. Ensure a safe, comfortable, and well-equipped workplace that is conducive to high performance and supports individual and team productivity.

2.0 Scope

This document applies to the work performed under the scope of the NASA IV&V Facility's ISO 9001 certification:

- Independent Software Verification and Validation
- System Software Independent Assessments
- Systems and Software Engineering Research
- Software Support for the Office of Safety and Mission Assurance (OSMA)

Additionally, this document applies to the IMS procedures that facilitate the accomplishment of the mission established in the NASA IV&V Facility's Implementation Plan.

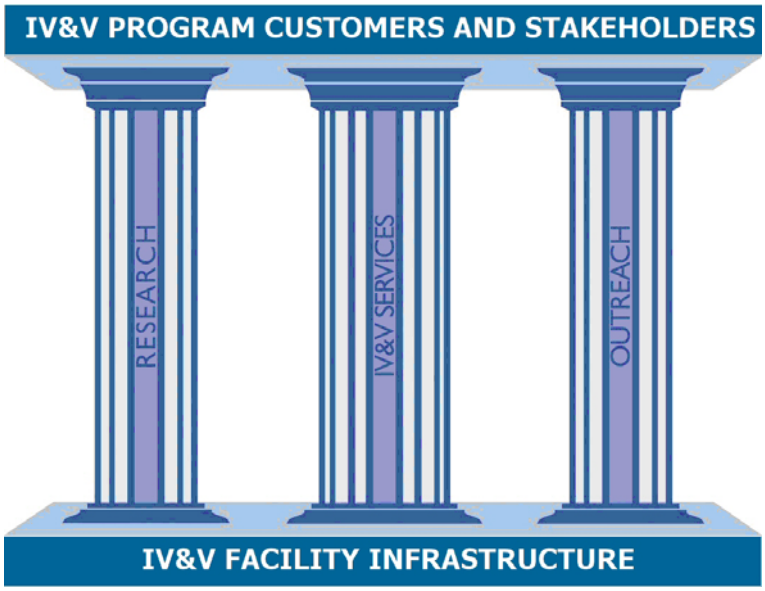
The NASA IV&V Facility's mission statement is:

"NASA IV&V provides assurance for our customers' safety and mission critical software in the areas of safety, reliability and availability; performs leading-edge research that improves IV&V and software assurance methods, practices, and

tools; participates in the vitality of the community, as well as engages the public in the experience and benefits of exploration and discovery."

To achieve its mission, the NASA IV&V Facility has embarked on a process to establish an increased value-added/needed presence within the NASA community. The process centers around its main purpose of offering needed software services, including independent verification and validation of the critical software under development, systems engineering support, and software assurance research.

The NASA IV&V Facility must execute successfully in its core functional areas to achieve its mission. Understanding the key elements of its mission allows NASA IV&V Facility civil service employees and contractors to advance the NASA IV&V Facility's mission across several primary areas of focus (Functional Organizations, or pillars). The following diagram offers a graphic representation of how the NASA IV&V Facility relates those pillars with mission fulfillment.



The three pillars provide the means by which the NASA IV&V Facility fulfills its ultimate mission, which is the complete satisfaction of internal and external customers and stakeholders.

2.1 Facility Infrastructure

To effectively and efficiently perform work related to the three pillars and its ultimate mission, the NASA IV&V Facility must provide a safe and well-equipped environment that is conducive to high performance and supportive of individual and team productivity. Thus, the NASA IV&V Facility infrastructure foundation must consist of operations and maintenance through Facility Management, management systems, and administrative organization. Through the provision of an effective and efficient infrastructure, the work performed within the three pillars will be successful.

2.2 IV&V Services

The IV&V Services pillar includes all aspects of delivering the highest quality state-of-the-art independent verification and validation services to customers. The IV&V Services pillar also includes activities that support establishing the NASA IV&V Facility as the preeminent leader in IV&V expertise, tools, and processes. The IV&V Services pillar is the principle reason for the IV&V program and NASA IV&V Facility's existence.

2.3 Research

The Research pillar represents the many research efforts undertaken to improve and advance software assurance methods, practices, and tools.

2.4 Outreach

The Outreach pillar represents a commitment to participate in the vitality of the communities that host and surround the NASA IV&V Facility. The Outreach pillar includes a number of proactive services, including education and economic development. The Outreach pillar also requires the NASA IV&V Facility to engage the public in the experience and benefit of exploration and discovery.

3.0 Organization

The NASA IV&V Program is a NASA Program established in accordance with NASA Policy Directive (NPD) 2820.1.C. The NASA IV&V Program is delegated from the Associate Administrator (AA) of Office Safety Mission Assurance (OSMA), and assigned to the Goddard Space Flight Center (GSFC) Director. The NASA IV&V Facility Director serves as the NASA IV&V Program Manager, reporting directly to the GSFC Director. OSMA maintains IV&V functional oversight.

A NASA-level Board of Directors comprised of the Mission Directorate AAs, Chief Engineer, Chief Information Officer (CIO), and with the GSFC Director and NASA IV&V Facility Director as ex officio members, will advise the Chief Safety and Mission Assurance Officer on the funding requirement and allocation of IV&V services among NASA's programs / projects on an annual basis. The NASA IV&V funding requirement will be submitted as part of the OSMA Program Operating Plan (POP) process.

The following organizational charts depict the NASA IV&V Facility's relationship with GSFC within Code 100, the NASA IV&V Board of Directors (IBD) and the OSMA, and the Functional Organizations within the NASA IV&V Facility.

3.1 Code 100

The following chart depicts how the NASA IV&V Facility is managerially attached to GSFC. Note that the NASA IV&V Facility Director is the Program Manager within Code 100, reporting directly to the GSFC Director.

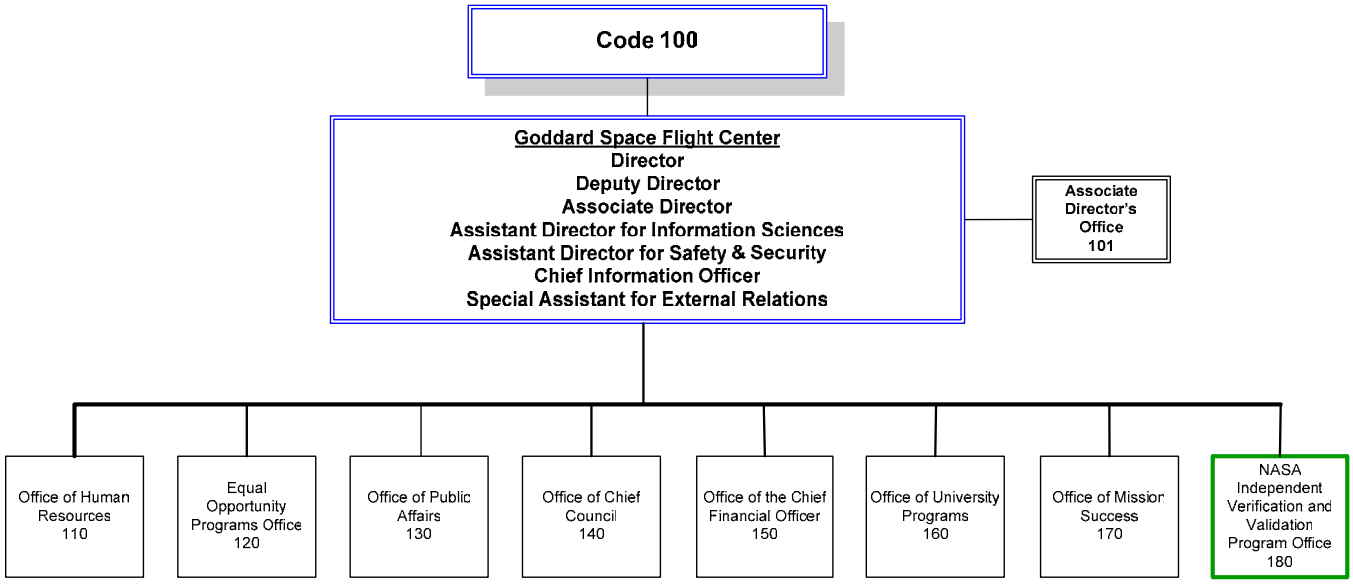


Figure 1 - Code 100 Organizational Chart

3.2 NASA IV&V Program

The following chart depicts the NASA IV&V Program's relationship with NASA Headquarters, the OSMA, the IBD, and GSFC.

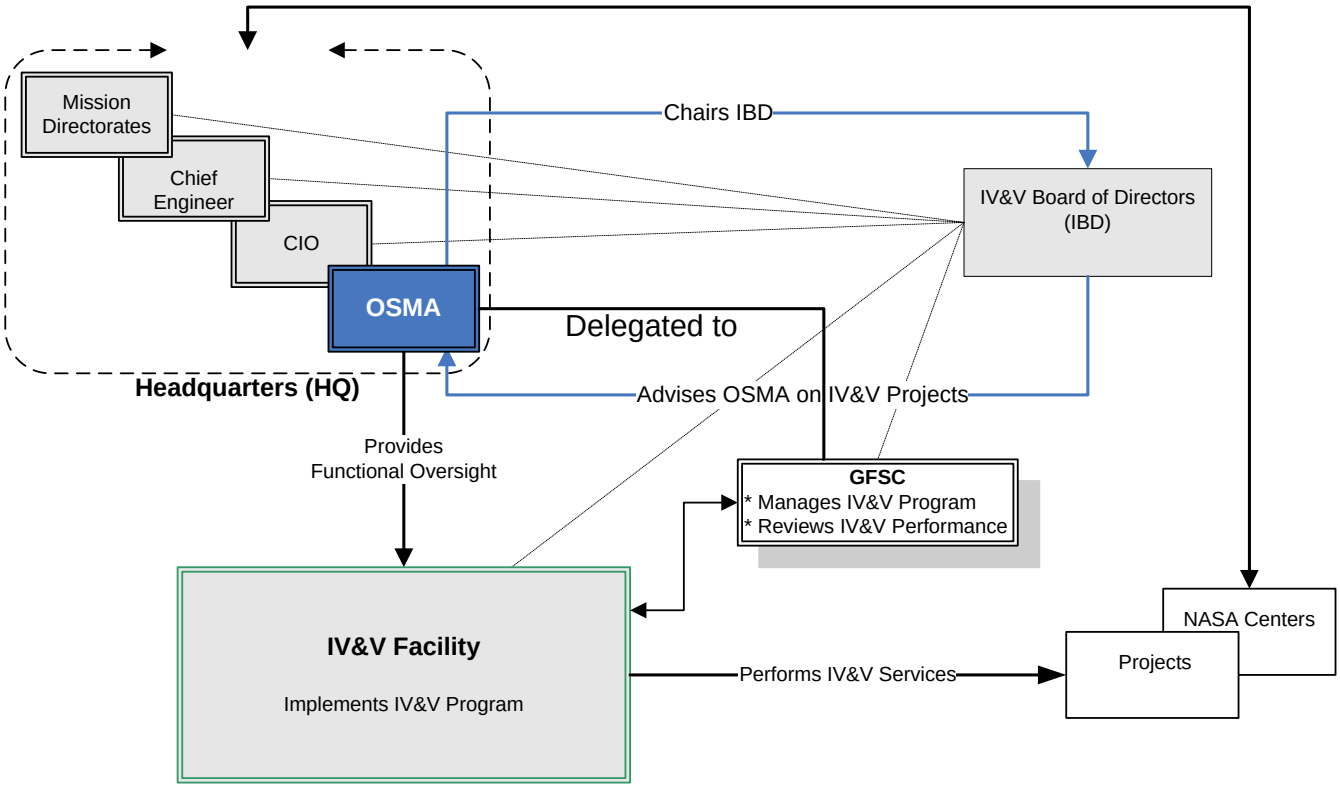


Figure 2 – NASA IV&V Program Organizational Chart

3.3 Functional Organization Structure

The following chart depicts the NASA IV&V Facility's Functional Organizations (Research, IV&V Services, Outreach, and Facility Infrastructure) in relation to the IMS. Each Functional Organization has a Functional Lead to manage personnel and work performed under each Functional Organization.

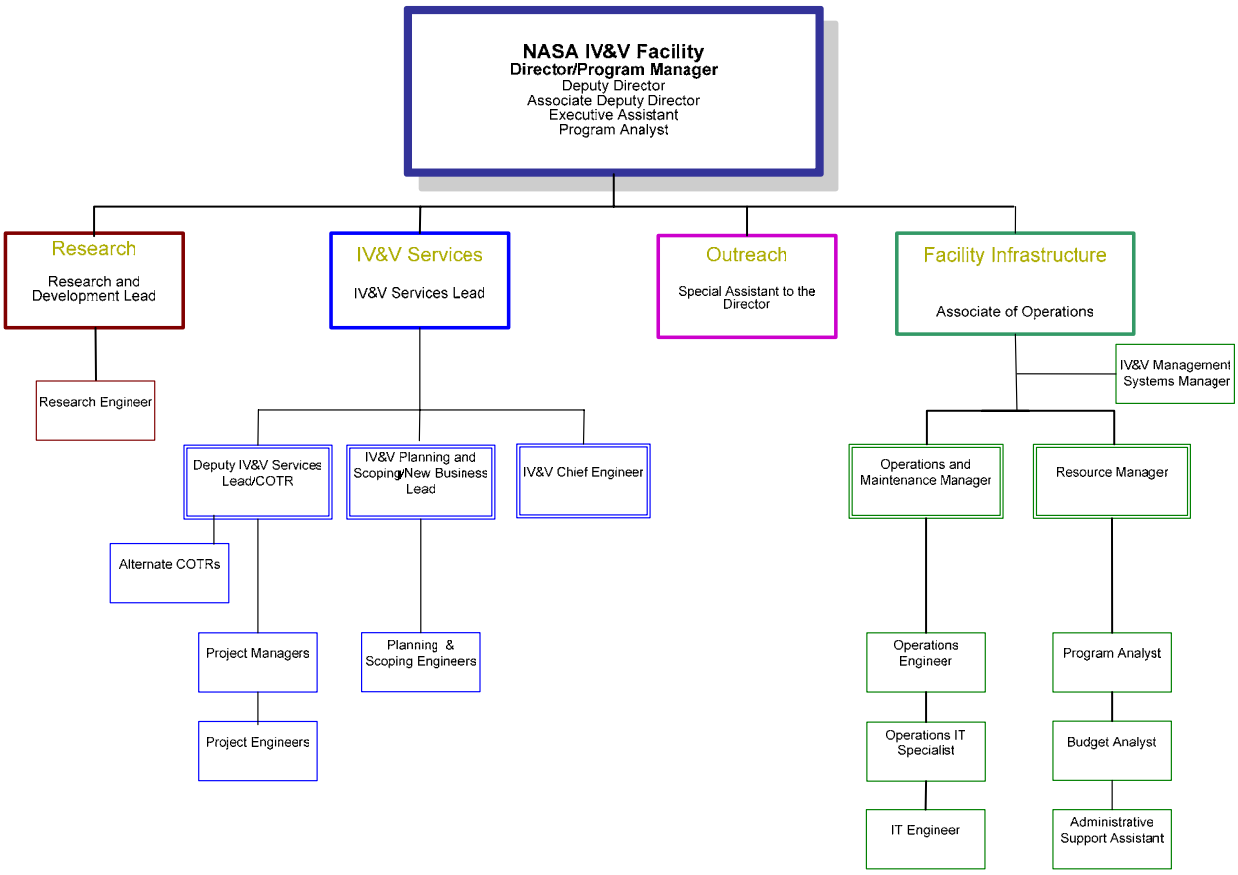


Figure 3 – Functional Organization Structure Chart

3.4 IMS

Please refer to the IMS Documentation Master List for a current representation of IMS documents, Process Owners (POs), and Approving Officials.

4.0 Definitions and Acronyms

The following are general definitions of official NASA IV&V Facility roles described in this document and depicted in Figure 3, Functional Organization Structure Chart. Specialized definitions may be identified in each system level procedure (SLP) or work instruction (WI).

4.1 Administrative Office

The Administrative Office is composed of NASA IV&V Facility civil service employees who direct a variety of support functions and services, provide administrative assistance to Facility Management, and serve as technical experts in assigned programs. Administrative personnel have knowledge of NASA operations, policies, and procedures.

4.2 Administrative Support Assistant

The Administrative Support Assistant is a member of the Administrative Office. The Administrative Support Assistant provides a variety of support functions and services, provides administrative assistance to Facility Management and serves as a technical expert in assigned programs. The Administrative Support Assistant has knowledge of NASA operations, policies, and procedures.

4.3 Alternate Contracting Officer's Technical Representative (Alternate COTR)

The Alternate COTR is a NASA IV&V Facility civil service employee who will acquire those duties and responsibilities during short absences of the COTR as indicated by a notification from the COTR or by notification of any type of leave taken by the COTR (see Section 4.12, *Contracting Officer's Technical Representative (COTR)*).

4.4 Approving Official

The Approving Official is a NASA IV&V Facility civil services employee who reviews and approves document change requests (DCRs). The Approving Official is the IMS Representative (MSR) for all IMS documents except for the QM. The MSR is the PO of the QM and the Director is the Approving Official of the QM.

4.5 Associate Deputy Director

The Associate Deputy Director is a NASA IV&V Facility civil service employee responsible for organizational and strategic planning.

4.6 Associate of Operations

The Associate of Operations is a NASA IV&V Facility civil service employee assigned by Facility Management to assist the Director with managing the infrastructure activities of the NASA IV&V Facility.

4.7 Budget Analyst

The Budget Analyst is a NASA IV&V Facility civil service employee who performs program, project, and NASA IV&V Facility financial and budget analyses. Budget Analysts support the Resource Manager (RM) on everyday Resource Management Office (RMO) activities.

4.8 Center Lead

The Center Lead is a NASA IV&V Facility civil service employee responsible for the coordination of NASA Center-specific, IV&V project-related meetings and presentations. The Center Lead will support the Planning and Scoping (P&S)/New Business Lead by working with the Center IV&V Liaison to identify and plan for future IV&V projects.

4.9 Center IV&V Liaison

The Center IV&V Liaison is an individual (typically a NASA civil service or Jet Propulsion Laboratory [JPL] employee) who is the NASA Point of Contact (NPOC) at a specific NASA Center for IV&V project-related issues. The Center IV&V Liaison works closely with the Center Lead to coordinate NASA Center-specific meetings and presentations, and identify and plan for future IV&V projects.

4.10 Configuration and Control Board (CCB)

A CCB is a team of NASA IV&V Facility civil service employees and/or contractors responsible for analyzing and approving changes to software, web sites, or other applications.

4.11 Contracting Officer (CO)

A CO is a NASA civil service employee who specializes in contract-related functions. A CO is a contract specialist with the authority to enter into, administer, and/or terminate contracts, and make related determinations and findings (see Federal Acquisition Regulation (FAR) 2.101).

4.12 Contracting Officer's Technical Representative (COTR)

The COTR is a NASA IV&V Facility civil service employee nominated by Facility Management and delegated by the CO. The COTR performs

technical management of a contract in accordance with FAR and NASA FAR Supplement (NFS) guidelines.

4.13 Contractor

A Contractor is an individual or entity that enters into a legal contract with the NASA IV&V Facility to perform an activity or service for the NASA IV&V Facility.

4.14 Corrective Action Request (CAR)

A CAR is an action taken to eliminate the cause(s) of an existing non-conformance or other undesirable situation with a product or process in order to prevent recurrence.

4.15 Corrective and Preventive Action System Manager (CAR/PAR Manager)

The CAR/PAR Manager is a NASA IV&V Facility civil service employee designated by Facility Management to manage the Corrective and Preventive Action System (CAR/PAR System).

4.16 Corrective and Preventive Action System (CAR/PAR System)

The CAR/PAR System is a database used to track and document the NASA IV&V Facility's CARs and preventive action requests (PARs).

4.17 Customer

A customer is the purchaser, user, or recipient of a product or service provided by the NASA IV&V Facility. A customer can be internal or external to the NASA IV&V Facility.

4.18 Deputy Director

The Deputy Director is a NASA IV&V Facility civil service employee who assists the Director with the management of the NASA IV&V Program, and the leadership and operation of the NASA IV&V Facility.

4.19 Deputy IV&V Services Lead

The Deputy IV&V Services Lead is a NASA IV&V Facility civil service employee appointed by the IV&V Services Lead. The Deputy IV&V Services Lead is responsible for ensuring consistent, effective, and efficient project management amongst the various IV&V projects. The Deputy IV&V Services Lead works with the Project Managers (PMs) assigned to those projects to help resolve technical and performance issues related to the management of the project.

4.20 Deputy Project Manager (DPM)

The DPM is a NASA IV&V Facility civil service employee who performs one or more project management-related tasks /duties as directed by the PM.

4.21 Director

The Director is a NASA IV&V Facility civil service employee who manages the NASA IV&V Program, and leads the operations of the NASA IV&V Facility.

4.22 Document Change Request (DCR)

A DCR is used to propose a new SLP or WI, or to recommend revision or cancellation of an existing SLP or WI.

4.23 Document Control Custodian (DCC)

The DCC is a NASA IV&V Facility civil service employee, or alternate, responsible for creating, processing, and maintaining the record of DCRs.

4.24 Executive Assistant

The Executive Assistant is a NASA IV&V Facility civil service employee who works in the Administrative Office and is responsible for managing the Director's calendar, coordinating travel, timekeeping, and preparing documentation.

4.25 Facility Management

Facility Management is a group of NASA IV&V Facility civil service employees who hold official management positions at the NASA IV&V Facility.

4.26 Form

A form is an instrument associated with a policy, procedure, or process employed at the NASA IV&V Facility.

4.27 Formal Agreement

A Formal Agreement is a document used to identify the managerial, technical, and business aspects of an agreement between the NASA IV&V Facility and a customer or Contractor to perform IV&V or system/software engineering tasks.

4.28 Functional Lead

The Functional Lead is a NASA IV&V Facility civil service employee who manages a Functional Organization within the NASA IV&V Facility.

4.29 Functional Organization

A Functional Organization consists of a group of hierarchically organized personnel who perform work for one of the NASA IV&V Facility's primary business functions. See Section 3.3, *Functional Organization Structure*, for a graphical representation of the NASA IV&V Facility's Functional Organizations.

4.30 Implementation Plan

The Implementation Plan is a document that describes and outlines the methods by which the NASA IV&V Facility's goals, objectives, and achievements are realized.

4.31 IMS Audit Manager (Audit Manager)

The Audit Manager is a NASA IV&V Facility civil service employee designated by Facility Management to manage the Internal Assessment Audit Program.

4.32 IMS Manager

The IMS Manager is a NASA IV&V Facility civil service employee or alternate who manages the IMS. IMS management duties include serving as, or electing an alternate to serve as, Audit Manager, DCC, Master List Custodian (MLC), and the CAR/PAR Manager.

4.33 IMS Master List

The IMS Master List is a document located on the IMS web site (http://ims.ivv.nasa.gov/masterlist.php) that lists all IMS documents, including their current revision letter, effective date, PO, Approving Official, and latest associated DCR number.

4.34 IMS Master List Custodian (MLC)

The MLC is an individual or alternate responsible for creating and updating the IMS Master List of documents.

4.35 IMS Representative (MSR)

The MSR is a NASA IV&V Facility civil service employee designated by Facility Management responsible for the establishment, implementation, and maintenance of the IMS.

4.36 Information Technology Engineer (IT Engineer)

The IT Engineer is a NASA IV&V Facility civil service employee who works for the Associate of Operations to provide NASA IV&V Facility infrastructure support.

4.37 Internal Assessment Audit Program

The Internal Assessment Audit Program establishes how audits of the IMS shall be planned, scheduled, and conducted, and how audit results shall be documented and reported to Facility Management.

4.38 IV&V Board of Directors (IBD)

The NASA IV&V Facility is funded through the NASA General and Administrative (G&A) budget. The IBD is chaired by the OSMA and is comprised of representatives from each Mission Directorate AA, the CIO, the Chief Engineer, the Director of GSFC, and the NASA IV&V Facility. The IBD is responsible for identifying customer projects that will receive G&A-funded IV&V.

4.39 IV&V Chief Engineer

The IV&V Chief Engineer is a NASA IV&V Facility civil service employee who provides leadership and coordination in support of achieving the NASA IV&V Facility's IV&V strategic goals, continuously improving research efforts in support of IV&V processes, and continuously improving the IV&V process itself.

4.40 IV&V Services Lead

The IV&V Services Lead is a NASA IV&V Facility civil service employee who provides management, leadership, and guidance for IV&V Services.

4.41 Metrics Owner

A Metrics Owner is a NASA IV&V Facility civil services employee responsible for establishing, maintaining, updating, and reporting each metric included in the NASA IV&V Facility Metrics Program.

4.42 Mission Model

The Mission Model is a matrix identifying IV&V life cycle cost estimates for IV&V projects. The NASA IV&V Facility uses this model for planning purposes. The P&S/New Business Lead is the Mission Model owner.

4.43 NASA IV&V Facility Filing System (Filing System)

The Filing System is the system in which all project and program files are housed. The Administrative Office maintains the Filing System.

4.44 NASA IV&V Facility Management System (IMS)

The IMS is the NASA IV&V Facility's quality management system. The IMS establishes process guidelines through SLPs, WIs, and forms to ensure that customers receive the highest quality products and services. The IMS also ensures that the processes conducted at the NASA IV&V Facility conform to ISO 9001:2000 Standard requirements. A link to the IMS web site can be found on the NASA IV&V Facility's web site.

4.45 NASA IV&V Facility Metrics Program

The NASA IV&V Facility Metrics Program is a system that facilitates the establishment, collection, analysis, and communication of metrics at the NASA IV&V Facility.

4.46 NASA IV&V Organization

The NASA IV&V Organization refers to the structure through which NASA IV&V Facility civil service employees, contractors, and other associated entities systematically cooperate to conduct business. The NASA IV&V Organization also encompasses the managerial and administrative personnel who facilitate the daily operation of the NASA IV&V Facility.

4.47 NASA IV&V Program

The NASA IV&V Program is a NASA Program established in accordance with NPD2820.1C. The NASA IV&V Program is delegated from the AA of the OSMA, and assigned to the GSFC Director. The NASA IV&V Facility Director serves as the NASA IV&V Program Manager, reporting directly to the GSFC Director.

4.48 NASA Point of Contact (NPOC)

An NPOC is a NASA civil service employee who has the authority and responsibility to prepare, implement, and direct specific work performed at the NASA IV&V Facility.

4.49 Non-conformance

A non-conformance is a lack of compliance with a specified process or procedure associated with the IMS, a non-conforming product, or a deficiency in the IMS itself.

4.50 Office of Human Resources at Goddard Space Flight Center (OHR-GSFC)

The OHR-GSFC supports the NASA IV&V Facility by providing human capital resources so that the NASA IV&V Facility can fulfill its mission.

4.51 Office of Safety and Mission Assurance (OSMA)

OSMA is located at NASA Headquarters in Washington, DC. OSMA assures the safety and enhances the success of all NASA activities through the development, implementation, and oversight of NASA-wide safety, reliability, maintainability, and quality assurance policies and procedures.

4.52 Operations and Maintenance Manager (O&M Manager)

The O&M Manager is a NASA IV&V Facility civil service employee who assists the Associate of Operations and manages the contract with the West Virginia University Research Corporation (WVURC) for all O&M services.

4.53 Operations Engineer

The Operations Engineer is a NASA IV&V Facility civil service employee who is responsible for web site management, property management, and library coordination.

4.54 Operations IT Specialist

The Operations IT Specialist is a NASA IV&V Facility civil service employee who is responsible for computer programming.

4.55 Outreach Manager

The Outreach Manager is a NASA IV&V Facility civil service employee who provides oversight for all outreach activities.

4.56 Planning and Scoping Engineer (P&S Engineer)

The P&S Engineer is a NASA IV&V Facility civil service employee who will assist the P&S/New Business Lead in performing assessments on NASA projects' high-level IV&V needs and associated cost estimates.

4.57 Planning and Scoping/New Business Lead (P&S/New Business Lead)

The P&S/New Business Lead is a NASA IV&V Facility civil service employee responsible for monitoring the establishment of new NASA missions and assessing the high-level IV&V needs for those missions. The P&S /New Business Lead is responsible for generating cost estimates which are used to support Request For Offers (RFO). The P&S/New Business Lead is responsible for the Mission Model, which is used as input into the IBD.

4.58 Point of Contact (POC)

The POC is an identified employee of a customer organization to which the NASA IV&V Facility is providing services. The POC has, or has knowledge of the person(s) having, the authority and responsibility to prepare, implement, direct, and distribute funding to the NASA IV&V Facility for services performed under a contract.

4.59 Preventive Action Request (PAR)

A PAR is an action taken to recognize issues that could lead to non-conformances, or to detect trends through data analysis to identify issues that may result in future non-conformances.

4.60 Process Owner (PO)

The PO is a NASA IV&V Facility civil service employee whose job duties are related to a procedure. The PO is assigned by Facility Management to be the lead of an established SLP or WI.

4.61 Program Analyst

The Program Analyst is a NASA IV&V Facility civil service employee who performs program, project, and NASA IV&V Facility financial analyses.

4.62 Project Engineer

The Project Engineer is a NASA IV&V Facility civil service employee who assists PMs and performs IV&V tasks as assigned. Project Engineers also participate in or lead NASA IV&V Facility and Center Initiative research projects.

4.63 Project Manager (PM)

The PM is a NASA IV&V Facility civil service employee appointed by Facility Management to perform project management functions.

4.64 Quality Manual (QM)

The QM is a document that defines the manner in which the NASA IV&V Facility implements the IMS. The QM defines the relationships between ISO 9001:2000 Standard requirements and IMS procedural documents.

4.65 Quality Policy

The Quality Policy is the course of action intended to influence and determine decisions, actions, and other matters relating to the NASA IV&V Facility's commitment to providing superior quality products and services, through continuous improvement, that meet or exceed customer requirements.

4.66 Quarterly Executive Dialog (QED)

A QED is a formal, face-to-face customer dialogue exchange between Facility Management and Customer management (e.g., NASA Center or Contractor management, etc.).

4.67 Quarterly Management Review (QMR)

The QMR is a Facility Management-performed quarterly review of the suitability, adequacy, and effectiveness of the IMS. The QMR also covers the CAR/PAR System and the Internal and External Assessment Audit Programs, and NASA IV&V Facility Metrics Program.

4.68 Research and Development Lead

The Research and Development Lead is a NASA civil service employee with the overall management authority and responsibility for the research program at the NASA IV&V Facility. While not always the selection authority, the Research and Development Lead will keep track of initiatives that need to be awarded or renewed.

4.69 Research Engineer

The Research Engineer is a NASA IV&V Facility civil service employee who is responsible for the technical performance of research.

4.70 Resource Management Office (RMO)

The RMO is composed of NASA IV&V Facility civil service employees who are responsible for financial management of the NASA IV&V Facility.

4.71 Resource Manager (RM)

The RM is a NASA IV&V Facility civil service employee responsible for managing the RMO. The RM is responsible for ensuring the overall integrity of the financial dollars for the NASA IV&V Facility. The RM will implement financial controls through various systems.

4.72 Special Assistant to the Director

The Special Assistant to the Director is a NASA IV&V Facility civil service employee who provides oversight for all outreach activities. The Special Assistant to the Director also serves as the legislative affairs coordinator.

4.73 System Level Procedure (SLP)

An SLP is a document that provides the principles and operating procedures for a specific aspect of the IMS. An SLP defines the responsibilities of and relationships between organizations implementing the procedure within the IMS. An SLP describes what actions shall be performed, and when, where, and by whom those actions shall be performed.

4.74 Tools Lab Manager

The Tools Lab Manager is a NASA IV&V Facility civil service employee responsible for managing the NASA IV&V Facility Tools Laboratory (Tools Lab) and associated contractor support, and for processing Tools Lab requests. The Tools Lab Manager is also responsible for overseeing the request process through to completion.

4.75 TrackWise

TrackWise is the NASA IV&V Facility's action tracking system.

4.76 Travel Manager

Travel Manager is NASA's automated travel management system.

4.77 WebTADS

WebTADS is NASA's electronic time and attendance recording system.

4.78 West Virginia University Research Corporation (WVURC)

The WVURC is an organization associated with West Virginia University (WVU). WVURC owns the NASA IV&V Facility building and the property on which the building is located. WVURC provides O&M services for the NASA IV&V Facility.

4.79 Work Instruction (WI)

A WI is a document that provides detailed, systematic instructions on how to perform the specific tasks necessary to ensure consistent working methods and conformance to required quality standards. WIs may be presented as forms, flowcharts, assembly or inspection procedures, detailed process instructions, manuals, specifications, standards, or other methodologies.

4.80 Acronyms

AA	Associate Administrator
CAR	Corrective Action Request
CIO	Chief Information Officer
CO	Contracting Officer
COTR	Contracting Officer's Technical Representative
DCC	Document Control Custodian
DCR	Document Change Request
DPM	Deputy Project Manager
FA	Formal Agreement
FAR	Federal Acquisition Regulations
G&A	General and Administrative
GSFC	Goddard Space Flight Center
IBD	NASA IV&V Board of Directors
IEEE	Institute of Electrical and Electronics Engineering
IMS	NASA IV&V Facility Management System
ISO	International Organization for Standardization
IT	Information Technology
IV&V	Independent Verification and Validation
JPL	Jet Propulsion Laboratory
MLC	Master List Custodian
MSR	IMS Representative
NFS	NASA FAR Supplement
NPD	NASA Policy Directive
NPG	NASA Policy Guideline

NPOC	NASA Point of Contact
NPR	NASA Procedural Requirement
O&M	Operations and Maintenance
OHR-GSFC	Off ice of Human Resources – Goddard Space Flight Center
OSMA	Office of Safety and Mission Assurance
P&S	Planning and Scoping
PAR	Preventive Action Request
PM	Project Manager
PO	Process Owner
POC	Point of Contact
POP	Program Operating Plan
QED	Quarterly Executive Dialog
QM	Quality Manual
QMR	Quarterly Management Review
RFO	Request for Offers
RM	Resource Manager
RMO	Resource Management Office
SLP	System Level Procedure
WI	Work Instruction
WVU	West Virginia University
WVURC	West Virginia University Research Corporation

5.0 Responsibilities and Authorities

All NASA IV&V Facility personnel are responsible for the quality of their work, the conformance of their work with the requirements of the IMS, and the immediate adjustment of their in-process work when unsafe conditions or IMS requirement deficiencies exist. However, particular IMS-related responsibilities are assigned to members of Facility Management, PMs, organizational leads, and IMS administrators for the effective operation of their processes and projects as described below.

5.1 Administrative Support Assistant

The Administrative Support Assistant shall:

- Serve as the point of contact and provide employee training and support for WebTADS and Travel Manager.
- Ensure that quality records are logged and filed in the Filing System.
- Order and maintain office supplies for civil service employees.
- Monitor and track administrative action items in TrackWise.

5.2 Associate of Operations

The Associate of Operations shall:

- Manage all NASA IV&V Facility infrastructure operations and activities.
- Manage the WVURC contract for all O&M and security services.
- Establish infrastructure policies and procedures.

5.3 Audit Manager

The Audit Manager shall:

- Ensure that the NASA IV&V Facility maintains a qualified audit staff.
- Define the NASA IV&V Facility's yearly audit schedule.
- Ensure that all areas within the IMS are audited at least yearly.
- Assign auditors and define the scope and depth for each audit.
- Compile audit report and present findings to Facility Management.

5.4 Contracting Officer's Technical Representative (COTR)

The COTR shall:

- Ensure the technical management of NASA IV&V Facility contracts in accordance with NASA and federal guidelines, as delegated by the CO.

5.5 CAR/PAR Manager

The CAR/PAR Manager shall:

- Establish, maintain, and administer control of the corrective and preventive action system.
- Assign CAR/PAR numbers and close completed actions.
- Prepare corrective and preventive action management status reports.

5.6 Deputy Director

The Deputy Director shall:

- Ensure that an adequate number of qualified, skilled, and trained personnel and other resources are available to implement the IMS.
- Ensure that personnel comply with applicable standards, regulations, specifications, and documented procedures.

5.7 Deputy IV&V Services Lead

The Deputy IV&V Services Lead shall:

- Evaluate Formal Agreements (FAs) to ensure that services satisfy customer requirements.
- Ensure that technical and financial issues related to the management of projects are addressed.
- Assist in negotiating FAs with customers.
- Assist in conflict resolution.
- Ensure proper IV&V risk management on each IV&V project.

5.8 Director

The Director shall:

- Define the Quality Policy.
- Ensure the communication and understanding of the Quality Policy throughout the NASA IV&V Organization.
- Appoint a member of Facility Management as the MSR. This appointment shall be documented, and the document maintained as a quality record.

5.9 Document Control Custodian (DCC)

The DCC shall:

- Ensure that a record of all DCRs is maintained.
- Annually initiate a PAR requiring each PO to review his or her process documents for necessary updates.

5.10 IMS Manager

The IMS Manager shall:

- Enhance and maintain the IMS.
- Serve as or appoint NASA IV&V Facility civil service employees as the MLC, DCC, Audit Manager, and CAR/PAR Manager.

5.11 IMS Master List Custodian (MLC)

The MLC shall:

- Ensure the currency of the IMS Master List.

5.12 IMS Representative (MSR)

The MSR shall:

- Document and maintain the Quality Policy.
- Ensure that the IMS is established, implemented, and maintained.
- Present regular reviews of the suitability and effectiveness of the IMS to Facility Management.
- Ensure documented procedures define the responsibility, authority, and relationship of all personnel who perform or verify work-affecting quality.
- Ensure these documented procedures adequately define the authority and provide for the organizational freedom of personnel to perform assigned responsibilities.
- Facilitate continuous improvement to the IMS.
- Ensure metrics are developed, tracked, and reported as required by Facility Management to assess the performance of the IMS.

5.13 IV&V Services Lead

The IV&V Services Lead shall:

- Appoint the Deputy IV&V Services Lead and Center Leads.
- Assign PMs to IV&V projects in cooperation with the P&S/New Business Lead and the Deputy IV&V Services Lead.
- Review Formal Agreements.

5.14 O&M Manager

The O&M Manager shall:

- Manage the day-to-day O&M activities.
- Assist the Associate of Operations in managing the WVURC contract.

5.15 Outreach Manager

The Outreach Manager shall:

- Promote the awareness of the NASA IV&V Facility and its mission through community services.
- Promote educational resources and training opportunities for educators.
- Encourage student proliferation in science, technology, engineering, and mathematics through various activities.

5.16 P&S/New Business Lead

The P&S/New Business Lead shall:

- Ensure that new and future projects are tracked and to generate cost estimates for these projects.
- Ensure that a cost estimation repository for all current and future projects is maintained.
- Ensure the generation of planning and scoping activities that includes appropriate tasking and associated costs estimates for projects.
- Promote, coordinate, and lead IV&V briefings to external organizations.

5.17 Project Manager (PM)

The PM shall:

- Obtain and communicate customer requirements to the appropriate personnel or functional organization.
- Ensure that products and services satisfy customer requirements, including quality, safety, cost, schedule, performance, reliability, durability, accuracy, and maintainability.

5.18 Research and Development Lead

The Research and Development Lead shall:

- Ensure the planning, proposal solicitation, evaluation and selection, contracting and management for the NASA IV&V Facility's research program.

5.19 Resource Manager (RM)

The RM shall:

- Ensure the integrity and accountability of the NASA IV&V Facility financial and purchasing activities.

5.20 Tools Lab Manager

The Tools Lab Manager shall:

- Ensure that tools lab requests are processed through to completion and that all associated records are maintained.
- Manage the Tools Lab and associated contractor support.

6.0 IMS Diagrams

The following sections describe the relationships between IMS documents, ISO 9001:2000 Standard requirements, and reference documents.

6.1 IMS Document/ISO Standard Requirement Mapping Diagram

Each ISO 9001:2000 Standard requirement is directly related to one or more of the IMS documents; therefore, each ISO 9001:2000 Standard requirement is related to one or more mission pillar. Appendix A, IMS Document/ISO Standard Requirement Mapping Diagram, depicts the relationship between IMS documents, mission pillars, and the ISO 9001:2000 Standard requirements.

6.2 IMS Document Mapping Diagram

The IMS documents reference NPDs, NASA Procedural Requirements (NPRs), NASA Forms, NASA standards, FARs, NFS, OSMA plans, GSFC forms, Institute of Electrical and Electronics Engineering (IEEE) standards, and other documents within the IMS. Appendix B, IMS Document Mapping Diagram, depicts the relationships among IMS documents, other reference documents, and standards.

7.0 ISO Standard Requirements/IMS Document Application

This section of the document applies the ISO 9001:2000 Standard requirements to the IMS documents. This section of the document also applies the ISO 9001:2000 Standard requirements to the mission pillars. For a graphical depiction of the ISO 9001:2000 Standard requirements applied to the IMS documents and mission pillars, see Appendix A, IMS Document/ISO Standard Requirement Mapping Diagram.

This section lists the ISO 9001:2000 Standard requirements with their actual ISO Standard requirement number in parenthesis for easy reference. At the end of the ISO 9001:2000 Standard requirement description, the names of applicable IMS documents are listed.

7.1 Quality Management System (4.0)

7.1.1 General Requirements (4.1)

The NASA IV&V Facility's IMS consists of procedures, which are monitored and measured to achieve continual improvement.

This requirement applies to the QM.

7.1.2 Documentation Requirements (4.2)

7.1.2.1 General (4.2.1)

The NASA IV&V Facility shall document the quality policy, quality objectives, and QM in the IMS. The IMS is a quality management system that consists of the QM, SLPs, WIs, and forms. The SLPs, WIs, and forms in the IMS shall describe how product and service quality is attained. Records that provide evidence of quality management activities shall be retained according to each SLP or WI.

This requirement applies to the QM and all IMS SLPs, WIs, and forms.

7.1.2.2 QM (4.2.2)

The NASA IV&V Facility shall outline policies and procedures regarding the requirements of ISO 9001 in this document.

This requirement applies to the QM.

7.1.2.3 Control of Documents (4.2.3)

The NASA IV&V Facility shall formally control all IMS documents to ensure that:

- Documents are reviewed and approved both prior to issue and when changes are made.
- Document revision status is clearly identifiable.
- Documents are available at the point of use.
- Documents remain legible, readily identifiable, and retrievable.
- Obsolete documents are either destroyed or identified to prevent their inadvertent use.

These controls shall also be applied to documents from outside sources where required.

This requirement applies to the QM and following IMS documents:

SLP/WI	Forms
IVV 02, *Document and Data Control*	Form 1000 Form 1002 Form 1005 Form 1007 Form 1009 Form 1020

7.1.2.4 Control of Records (4.2.4)

The NASA IV&V Facility shall regard any relevant records that are generated as a result of using the IMS as quality records. The NASA IV&V Facility shall retain these records in accordance with NPR 1441.1 to provide evidence of the effective operation of the IMS. All quality

records shall be identified and stored for a defined period in conditions that protect them from damage, deterioration, and loss, and allow them to be appropriately retrieved. When the retention period expires, the documents shall be disposed of in a defined manner (e.g. incinerated, shredded, or recycled).

The NASA IV&V Facility shall apply these controls to all quality records whether they are on paper or electronic media. Where records are retained on computer, those records shall be protected from access through security mechanisms and shall be subject to regular backup on storage media according to IVV 16, *Control of Quality Records*.

This requirement applies to the QM and following IMS documents:

SLP/WI	Forms
IVV 02, *Administrative Controls*	Form 1000
IVV 05-1, *Document Control Custodian Work Instruction*	Form 1002
IVV 07, *Financial Data Control*	Form 1005
IVV 16, *Control of Quality Records*	Form 1007
	Form 1009
	Form 1020

7.2 Management Responsibility (5.0)

7.2.1 Management Commitment (5.1)

Facility Management is committed to continually improving the quality of products and services provided by the NASA IV&V Facility. Part of continually improving product and service quality includes establishing, evaluating, and updating the NASA IV&V Facility's quality policy and quality objectives.

Facility Management shall oversee, maintain, and review the IMS, communicate the importance of quality management concepts, and provide resources necessary for the operation of the IMS.

This requirement applies to the QM.

7.2.2 Customer Focus (5.2)

Facility Management and senior managers are committed to ensuring that customers will receive products and services that shall meet their needs and exceed their expectations. The development and continual improvement of the IMS shall ensure that the latest regulatory and legal requirements relating to product and service provision are understood and applied wherever necessary.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 09-4, *Project Management*

7.2.3 Quality Policy (5.3)

Facility Management shall identify the main goals of the IMS in the quality policy. This information is communicated throughout the NASA IV&V Facility. Please refer to Section 1.1, *Quality Policy*, of this document for additional information.

This requirement applies to the QM.

7.2.4 Planning (5.4)

7.2.4.1 Quality Objectives (5.4.1)

The NASA IV&V Facility shall establish measurable quality objectives that support the NASA IV&V Facility's quality policy. The quality objectives shall be communicated to the NASA IV&V Organization through media such as the Implementation Plan, annual reports, and web sites. Please refer to Section 1.2, *Quality Objectives*, for additional information.

This requirement applies to the QM.

7.2.4.2 Quality Management System Planning (5.4.2)

Through the IMS, the NASA IV&V Facility shall ensure that all operations that affect quality are planned and

organized to ensure that quality is achieved. Business and quality objectives shall be established at strategic and tactical levels within the NASA IV&V Organization, and shall be measured regularly

The NASA IV&V Facility's business and quality objectives shall be reviewed annually during the strategic and tactical planning. These reviews shall include the quality objectives and the integrity of the IMS as an operating management system.

This requirement applies to the QM and following IMS documents:

SLP/WI	Forms
IVV 05, *Document and Data Control*	Form 1000
IVV 05-1, *Document Control Custodian Work Instruction*	Form 1005
IVV 05-2, *Preparation of System Level Procedures*	Form 1007
IVV 05-3, *Preparation of Work Instructions*	
IVV 16, *Control of Quality Records*	

7.2.5 Responsibility, Authority, and Communication (5.5)

7.2.5.1 Responsibility and Authority (5.5.1)

General responsibilities and authorities are outlined in Section 5, *Responsibilities and Authorities*, of this document. Additional information shall be contained within each IMS SLP and WI.

This requirement applies to the QM and all IMS SLPs and WIs.

7.2.5.2 Management Representative (5.5.2)

Facility Management shall appoint the MSR to have ongoing operational responsibility for the IMS. The MSR shall be responsible for all IMS SLPs, WIs, and forms, and shall be responsible for the overall management of the IMS.

This requirement applies to the QM and all IMS SLPs and WIs.

7.2.5.3 Internal Communication (5.5.3)

Communication between departments is regarded as a vital element in ensuring that customer satisfaction is achieved. This is especially so on tailored systems, which will normally involve multiple departments of the organization. The NASA IV&V Facility shall install paper-based and computer-based systems, which ensure that the right information is available to the right personnel as needed. In addition, regular meetings shall be held at various levels to ensure that this information is accurate and up to date.

This requirement applies to the QM and all IMS SLPs, WIs, and forms.

7.2.6 Management Review (5.6)

7.2.6.1 General (5.6.1)

Facility Management shall review the IMS on a quarterly basis to determine its suitability, adequacy, and effectiveness. This review is called the QMR. Consideration shall be given at the QMR to a variety of items, such as the NASA IV&V Facility's performance at meeting the needs of customers, and the opportunities available for continually improving the IMS.

The QMR shall cover an overall IMS effectiveness statement, the CAR/PAR System, and the Internal Assessment Audit Program. The CAR/PAR Manager shall provide the status of the requests according to IVV 14, *Corrective and Preventive Action*, and the Audit Manager shall provide the status of audits according to IVV 17, Internal Quality Audits. The QMR shall be open to all affected personnel.

The NASA IV&V Facility is committed to the effective operation of its business; therefore, all actions arising

from these meetings shall be assigned to managers with prescribed deadlines for resolution and reporting.

The recorded minutes of each review meeting shall be reviewed by the MSR and retained according to IVV 16, *Control of Quality Records*, IVV 14, *Corrective and Preventive Action*, and IVV 17, *Internal Quality Audits*.

This requirement applies to the QM and the following IMS documents:

SLP/WI	Forms
IVV 12, *IV&V Facility Metrics*	Form 1005
IVV 14, *Corrective and Preventive Action*	
IVV 17, *Internal Quality Audits*	

7.2.6.2 Review of Input (5.6.2)

The input assessed during management reviews shall include results of audits, customer feedback, process performance, metrics analyses, product conformity, preventive and corrective action status, follow-up actions from previous management reviews, changes that could affect the IMS, and recommendations for improving the IMS.

This requirement applies to the QM and the following IMS documents:

SLP/WI	Forms
IVV 12, *IV&V Facility Metrics*	Form 1005
IVV 14, *Corrective and Preventive Action*	
IVV 17, *Internal Quality Audits*	

7.2.6.3 Review of Output (5.6.3)

The output from the management review shall include any decisions and actions related to improving the effectiveness of the IMS and its processes, improving product(s) related to customer requirements, and resource needs.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 12, *IV&V Facility Metrics*
IVV 14, *Corrective and Preventive Action*
IVV 17, *Internal Quality Audits*

7.3 Resource Management (6.0)

7.3.1 Provisions of Resources (6.1)

The NASA IV&V Facility shall ensure that there is an adequate number of suitable personnel, equipment, and other resources available to effectively manage and perform all activities required to achieve customer satisfaction.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 18, *Training*

7.3.2 Human Resources (6.2)

7.3.2.1 General (6.2.1)

Personnel performing work that affects product and service quality shall be competent to carry out that work. Competency shall be attained through a combination of education, training, skills, and experience. The NASA IV&V Facility relies on the Office of Human Resources at GSFC (OHR-GSFC) to help achieve staff competency goals.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 18, *Training*

7.3.2.2 Competency, Awareness, and Training (6.2.2)

Competent managers and personnel shall be appointed to perform assigned tasks, and shall possess the ability to resolve any problems either directly or through their immediate manager. Much of the work performed at the NASA IV&V Facility involves a large element of practical skill; therefore, many personnel are selected because of their ability to apply these skills rather than their formal qualifications. Personnel are generally selected for their overall competence to perform their work, but are also considered for their education, training, skills, and experience.

All personnel who perform tasks affecting quality shall be made aware of the importance of their work and how it affects the overall quality of the products and services provided by the NASA IV&V Facility.

The competency of personnel shall be assessed and any required training provided. All training shall be evaluated to ensure that it has been effective. Records of training, education, and qualifications shall be retained according to IVV 16, *Control of Quality Records*, and IVV 18, *Training*.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 18, *Training*

7.3.3 Infrastructure (6.3)

The IMS infrastructure shall include the building, workspace, equipment, and the supporting services involved in creating the NASA IV&V Facility's products or services. The NASA IV&V Facility shall determine, provide, and maintain the infrastructure needed to achieve quality results.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 04, *Operations and Maintenance Service Request Process*
IVV 20, *NASA IV&V Tools Lab Request Process*
IVV 20-1, *World Wide Web Resource Request Review and Approval*

7.3.4 Work Environment (6.4)

To ensure product conformity and customer satisfaction, the NASA IV&V Facility shall provide the necessary workspace, equipment, tools, environment, and materials. The NASA IV&V Facility shall take all available precautions to ensure that the quality of work is not compromised by external factors. The NASA IV&V Facility's work environment shall be configured to address any and all foreseeable conformity issues.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 02, *Administrative Controls*
IVV 02-1, *Work Instruction for Supply, Support, and Material Management*
IVV 04, *Operations and Maintenance Service Request Process*

7.4 Product Realization (7.0)

7.4.1 Planning of Product Realization (7.1)

The NASA IV&V Facility shall identify its main business processes and generate specific SLPs for each process to ensure product conformance and customer satisfaction. In addition, each project shall be accompanied by the appropriate task orders, project plans, or FAs that shall contain the necessary criteria for acceptability and/or objectives for quality to ensure satisfactory control. When applicable, individual quality plans shall be developed for specific products, projects, or contracts that shall describe particular controls for these situations.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 09-1, *Independent Verification and Validation*
IVV 09-4, *Project Management*
IVV 09-8, *Project Startup*
IVV 10, *Software and Hardware Configuration Management*

7.4.2 Customer Related Processes (7.2)

7.4.2.1 Determination of Requirements Related to the Product (7.2.1)

Customer requirements normally require some activity tailoring and/or special arrangements regarding personnel, tools, or systems. The NASA IV&V Facility shall ensure that the customer's requirements are established and documented. Any requirements that NASA IV&V Facility staff identify as necessary to perform the task(s) shall also be noted and related back to the customer appropriately. All work to be performed for a customer shall be documented and agreed upon by both parties. An FA serves as the appropriate documentation.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 09-1, *Independent Verification and Validation*
IVV 09-8, *Project Startup*
IVV 20, *NASA IV&V Tools Lab Request Process*

7.4.2.2 Review of Requirements Related to the Product (7.2.2)

The NASA IV&V Facility shall review requirements for accuracy and completeness to ensure that the requirements can be satisfied before formally accepting the task. Where there are ambiguous or conflicting requirements, they shall be clarified with the customer prior to the formal acceptance of the task(s), and recorded in accordance with IVV 16, *Control of Quality Records*, and IVV 09-4, *Project Management*.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 09-1, *Independent Verification and Validation*
IVV 09-4, *Project Management*
IVV 09-8, *Project Startup*

7.4.2.3 Customer Communication (7.2.3)

The NASA IV&V Facility regards communication with customers as vital in providing services and products that satisfy them. As such, the NASA IV&V Facility shall provide all departments with the necessary mechanisms to easily access information. The PM assigned to a project shall act as the main point of contact for customer inquires.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 09-1, *Independent Verification and Validation*
IVV 09-4, *Project Management*
IVV 09-4-1, *Work Instruction for IV&V Services Risk Management*
IVV 09-8, *Project Startup*

7.4.3 Design and Development (7.3)

NASA IV&V Facility personnel will ensure that the necessary design activities are being performed per NASA and/or customer requirements, industry standards, or contractor standards and requirements. The results of the NASA, customer, contractor, and/or industry standard and requirement analysis shall be documented and provided to the appropriate development and management personnel, and to the customer.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 10, *Software and Hardware Configuration Management*

7.4.4 Purchasing (7.4)

7.4.4.1 Purchasing Process (7.4.1)

Purchase of products and services for use in or on NASA IV&V Facility products shall be controlled through strict government rules and regulations. Ordering is based on the need for improved products and services. The NASA IV&V Facility relies on GSFC's Procurement Office to facilitate the purchasing process. Records detailing how products and services are evaluated shall be retained according to IVV 16, *Control of Quality Records*, and IVV 06, *Purchasing*.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 06, *Purchasing*
IVV 06-1, *Work Instruction for Procurement Request Procedure*
IVV 07, *Financial Data Control*

7.4.4.2 Purchasing Information (7.4.2)

Sequentially numbered purchase orders completed with all necessary information for the product/service required shall be used to order the good/service, and shall be reviewed for adequacy prior to their release.

Wherever possible, orders are only placed with approved suppliers. The NASA IV&V Facility shall define the procedure for approving and monitoring suppliers, and recording supplier status and evaluations performed.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 06, *Purchasing*
IVV 06-1, *Work Instruction for Procurement Request Procedure*
IVV 07, *Financial Data Control*

7.4.4.3 Verification of Purchased Product (7.4.3)

The verification of purchased products is defined in the IVV 06, *Purchasing*. If NASA IV&V Facility personnel or customers need to verify products at the supplier's premises, such activities shall be described in the purchase order.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 06, *Purchasing*
IVV 06-1, *Work Instruction for Procurement Request Procedure*
IVV 07, *Financial Data Control*

7.4.5 Product and Service Provision (7.5)

7.4.5.1 Control of Product and Service Provision (7.5.1)

The NASA IV&V Facility shall plan production, installation, and service processes. The NASA IV&V Facility shall also provide an environment where work can proceed in an orderly fashion. These controlled conditions may include:

- Information regarding product specifications
- Written instructions for carrying out the work
- Suitable equipment
- Adequate tools for monitoring and measuring process and product characteristics
- Activities for monitoring and measuring process and product characteristics
- Criteria for product release

- Delivery and post delivery servicing activities

This requirement applies to the QM and the following IMS documents:

SLP/WI	Forms
IVV 09-3, *Research Program* IVV 09-3-1, *Work Instruction for Evaluating Research Initiatives* IVV 09-3-2, *Work Instruction for Selecting OSMA SARP Research Initiatives* IVV 09-3-3, *Work Instruction for Selecting IV&V Facility Research Initiatives* IVV 09-3-4, *Work Instruction for Processing Procurements for Research Initiatives* IVV 09-3-5, *Work Instruction for Processing Research Deliverables* IVV 09-3-6, *Work Instruction for Conducting Research Initiative Performance Reviews* IVV 09-3-7, *Work Instruction for the Publication/Presentation of Research Results*	Form 1007

7.4.5.2 Validation of Process for Production and Service Provision (7.5.2)

The NASA IV&V Facility shall monitor and measure the finished product or service to verify and validate its quality. If it is not possible to verify or validate the quality of the finished good or service through monitoring or measurement, the IMS shall require validation. When validation is required, the IMS must define the criteria for the following:

- Review and approval of the process
- Approval of the equipment used
- Competency of the people who operate the process
- Specific methods and procedures used
- Ongoing assessment of the process validation

Records of the validation process shall be retained in accordance with IVV 16, *Control of Quality Records*.

This requirement applies to the QM and the following IMS documents:

SLP/WI	Forms
IVV 09-3, *Research Program* IVV 09-3-1, *Work Instruction for Evaluating Research Initiatives* IVV 09-3-2, *Work Instruction for Selecting OSMA SARP Research Initiatives* IVV 09-3-3, *Work Instruction for Selecting IV&V Facility Research Initiatives* IVV 09-3-4, *Work Instruction for Processing Procurements for Research Initiatives* IVV 09-3-5, *Work Instruction for Processing Research Deliverables* IVV 09-3-6, *Work Instruction for Conducting Research Initiative Performance Reviews* IVV 09-3-7, *Work Instruction for the Publication/Presentation of Research Results*	Form 1007

7.4.5.3 Identification and Traceability (7.5.3)

Where applicable, the NASA IV&V Facility shall establish procedures to identify a product or service, and shall determine what specifications pertain to it as it moves through development/analysis and delivery. Records of the specification identification shall be retained according to IVV 16, *Control of Quality Records*.

This requirement applies to the QM and the following IMS documents:

SLP/WI	Forms
IVV 09-3, *Research Program* IVV 09-3-1, *Work Instruction for Evaluating Research Initiatives* IVV 09-3-2, *Work Instruction for Selecting OSMA SARP Research Initiatives* IVV 09-3-3, *Work Instruction for Selecting IV&V Facility Research Initiatives* IVV 09-3-4, *Work Instruction for Processing Procurements for Research Initiatives* IVV 09-3-5, *Work Instruction for Processing Research Deliverables*	Form 1007

IVV 09-3-6, *Work Instruction for Conducting Research Initiative Performance Reviews*
IVV 09-3-7, *Work Instruction for the Publication/Presentation of Research Results*

7.4.5.4 Customer Property (7.5.4)

If the NASA IV&V Facility uses customer property in the course of performing work, the NASA IV&V Facility shall take special care of that property. The NASA IV&V Facility shall identify, verify, and protect customer property. Records of lost, damaged, or unsuitable customer property, including intellectual property, shall be retained according to IVV 16, *Control of Quality Records*.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 09-3, *Research Program*
IVV 09-3-1, *Work Instruction for Evaluating Research Initiatives*
IVV 09-3-2, *Work Instruction for Selecting OSMA SARP Research Initiatives*
IVV 09-3-3, *Work Instruction for Selecting IV&V Facility Research Initiatives*
IVV 09-3-4, *Work Instruction for Processing Procurements for Research Initiatives*
IVV 09-3-5, *Work Instruction for Processing Research Deliverables*
IVV 09-3-6, *Work Instruction for Conducting Research Initiative Performance Reviews*
IVV 09-3-7, *Work Instruction for the Publication/Presentation of Research Results*

7.4.5.5 Preservation of Product (7.5.5)

IV&V products (documentation containing an analysis of the customers design product) shall be completed via an internal peer review process to ensure its adequacy, accuracy, and conformance to quality requirements.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 09-3, *Research Program*
IVV 09-3-1, *Work Instruction for Evaluating Research Initiatives*
IVV 09-3-2, *Work Instruction for Selecting OSMA SARP Research Initiatives*
IVV 09-3-3, *Work Instruction for Selecting IV&V Facility Research Initiatives*
IVV 09-3-4, *Work Instruction for Processing Procurements for Research Initiatives*
IVV 09-3-5, *Work Instruction for Processing Research Deliverables*
IVV 09-3-6, *Work Instruction for Conducting Research Initiative Performance Reviews*
IVV 09-3-7, *Work Instruction for the Publication/Presentation of Research Results*

7.4.6 Control of Monitoring and Measuring Devices (7.6)

As software is used to perform measuring and monitoring activities, it shall be validated for accuracy and suitability prior to use. The NASA IV&V Facility's analytical product is a document containing an evaluation of a customer's development process and product. The use of measuring devices in the classical sense is not applicable.

This requirement applies to the QM and the following IMS documents:

SLP/WI	Forms
IVV 09-3, *Research Program*	Form 1007
IVV 09-3-1, *Work Instruction for Evaluating Research Initiatives*	
IVV 09-3-2, *Work Instruction for Selecting OSMA SARP Research Initiatives*	
IVV 09-3-3, *Work Instruction for Selecting IV&V Facility Research Initiatives*	
IVV 09-3-4, *Work Instruction for Processing Procurements for Research Initiatives*	
IVV 09-3-5, *Work Instruction for Processing Research Deliverables*	
IVV 09-3-6, *Work Instruction for Conducting Research Initiative Performance Reviews*	
IVV 09-3-7, *Work Instruction for the Publication/Presentation of Research Results*	

7.5 Measurement, Analysis, and Improvement (8.0)

7.5.1 General (8.1)

Measuring and monitoring activities shall be used throughout the NASA IV&V Organization to ensure that product conformity, customer satisfaction, the IMS, and products and services are continually improved. Metrics shall be collected and analyzed to ensure continual improvement. Each Metrics Owner shall be responsible for collecting, performing root cause analysis on, reporting on, and developing corrective actions for metrics in his or her area(s) of responsibility within the NASA IV&V Facility Metrics Program. Where appropriate, statistical techniques and other methodologies shall be employed, enabling the NASA IV&V Facility to gather and analyze data for these purposes.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 12, *IV&V Facility Metrics*
IVV 14, *Corrective and Preventive Action*
IVV 17, *Internal Quality Audits*

7.5.2 Monitoring and Measurement (8.2)

7.5.2.1 Customer Satisfaction (8.2.1)

Customer perception is regarded as one of the most important aspects of the NASA IV&V Facility's business. As such, the degree of customer satisfaction shall be measured and monitored via various methods, including customer surveys, formal face-to-face customer exchanges (known as QEDs), and informal customer dialogue. Whenever issues are received from customers, they shall be recorded, analyzed, and acted upon. A summary and analysis of customer issues shall be presented for review at management review meetings held periodically. Records of customer satisfaction measurement shall be retained according to IVV 16, *Control of Quality Records*.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 12, *IV&V Facility Metrics*
IVV 17, *Internal Quality Audits*

7.5.2.2 Internal Audit (8.2.2)

The NASA IV&V Facility shall perform internal quality audits periodically to ensure that the IMS continues to conform to ISO 9001:2000 Standard requirements. Personnel who are suitably trained and who do not perform the activity to be audited shall perform audits in accordance with IVV 17, *Internal Quality Audits*. Audits shall be scheduled to ensure that the NASA IV&V Organization is addressed at least annually, and shall take accounts of the importance of each activity and its status with regard to previous audit results.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 17, *Internal Quality Audits*

7.5.2.3 Monitoring and Measurement of Processes (8.2.3)

To ensure conformity of product, the NASA IV&V Facility shall measure and monitor processes used to create products. Records of these measurements shall be maintained to provide evidence of conformity with requirements. Where installation work is performed, the customer shall always be asked to accept the work prior to completing the project.

This requirement applies to the QM and the following IMS documents:

SLP/WI	**Forms**
IVV 12, *IV&V Facility Metrics*	Form 1000

IVV 14, *Corrective and Preventive Action*	Form 1005
IVV 17, *Internal Quality Audits*	

7.5.2.4 Monitoring and Measurement of Product (8.2.4)

To ensure conformity of product, the NASA IV&V Facility shall measure and monitor products. Products go through both informal peer reviews and formal management reviews. Records of these measurements shall be maintained to provide evidence of conformity with requirements. Where installation work is performed the customer shall always be asked to accept the work prior to completing the project.

This requirement applies to the QM and the following IMS documents:

SLP/WI	**Forms**
IVV 12, *IV&V Facility Metrics*	Form 1007
IVV 14, *Corrective and Preventive Action*	
IVV 17, *Internal Quality Audits*	

7.5.3 Control of Non-conforming Products (8.3)

Where products do not conform to requirements, they shall be handled to ensure that they cannot be used inadvertently. Defined methods for controlling non-conforming products are contained within other documented procedures and may include:

- Accepting with concession from customers
- Reworking and re-inspection
- Re-grading
- Scrap

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 09-4, *Project Management*

7.5.4 Analysis of Data (8.4)

The NASA IV&V Facility shall gather and analyze data in specific areas to help determine where improvements can be made. These areas shall include customer feedback, internal audits, inspections, results, product and process non-conformance, and supplier information.

This requirement applies to the QM and the following IMS documents:

SLP/WI
IVV 09-4, *Project Management*
IVV 12, *IV&V Facility Metrics*

7.5.5 Improvement (8.5)

7.5.5.1 Continual Improvement (8.5.1)

In order to better satisfy customers and become more successful as a business, the NASA IV&V Facility shall strive to continually improve the IMS, products, and processes. The primary tools for achieving this shall be the defined quality policy and objectives, management review meetings, internal audits, self-assessments, analysis of data, and corrective and preventive actions. Where improvements are identified, they shall be implemented and monitored for effectiveness.

This requirement applies to the QM and the following IMS documents:

SLP/WI	Forms
IVV 05, *Document and Data Control*	Form 1000
IVV 05-2, *Preparation of System Level Procedures*	Form 1005
IVV 05-3, *Preparation of Work Instructions*	
IVV 09-3, *Research Program*	
IVV 12, *IV&V Facility Metrics*	
IVV 14, *Corrective and Preventive Action*	

7.5.5.2 Corrective Action (8.5.2)

Defined methods for taking corrective actions are contained within many IMS documents. These methods shall ensure that these actions are properly identified and recorded so that the root cause of the problem encountered will be determined. Root cause determination allows the NASA IV&V Facility to take appropriate action, which ensures that the problem is resolved and does not reoccur. In addition, the information gathered will help prevent potential problems from arising elsewhere in the business. All actions taken shall be reviewed for effectiveness as a specific activity or during future internal audits.

This requirement applies to the QM and the following IMS documents:

SLP/WI	**Forms**
IVV 14, *Corrective and Preventive Action*	Form 1000 Form 1005

7.5.5.3 Preventive Action (8.5.3)

Defined methods for taking preventive actions are contained within many IMS documents. These methods shall ensure that these actions are properly identified and recorded so that the root cause of the problem encountered will be determined. Root cause determination allows the NASA IV&V Facility to take appropriate action, which ensures that the problem is resolved and does not reoccur. In addition, the information gathered will help prevent potential problems from arising elsewhere in the business. All actions taken shall be reviewed for effectiveness as a specific activity or during future internal audits.

In addition, the NASA IV&V Facility recognizes the importance of suppliers achieving customer satisfaction.

Thus, informal feedback on suppliers' performance and improvement data is provided to them on a regular basis via QEDs.

This requirement applies to the QM and the following IMS documents:

SLP/WI	Forms
IVV 14, *Corrective and Preventive Action*	Form 1000 Form 1005

8.0 Waiver Request and Approval Process

Any requirement in the IMS can be waived with proper justification and approval. A request for waiver shall be submitted using Form 1009, Waiver Request and Approval, and shall be approved by the requirement's PO and the MSR. The PO and the MSR may seek, or require the requester to seek, additional reviews or approvals, as they deem appropriate. The completed original Form 1009 shall be placed in the file associated with the process being waived.

Appendix A – IMS Document/ISO Standard Requirement Mapping Diagram

Pillars				IMS	ISO 9001:2000 Standard Requirement																					
Foundations	IV&V Services	Research	Outreach	SLPs/Work Instructions/Forms	4.0 Quality Management System	4.1 General Requirements	4.2 Documentation Requirements	4.2.1 General	4.2.2 Quality Manual	4.2.3 Control of Documents	4.2.4 Control of Records	5.0 Management Responsibility	5.1 Management Commitment	5.2 Customer Focus	5.3 Quality Policy	5.4 Planning	5.4.1 Quality Objectives	5.4.2 Quality Management System Planning	5.5 Responsibility, Authority, and Communication	5.5.1 Responsibility and Authority	5.5.2 Management Representative	5.5.3 Internal Communication	5.6 Management Review	5.6.1 General	5.6.2 Review Input	5.6.3 Review Output
X	X	X	X	IVV QM		X		X	X	X	X		X	X	X		X	X		X	X	X		X	X	X
X	X	X	X	IVV 02				X			X									X	X	X				
X	X	X	X	IVV 02-1				X												X	X	X				
X	X	X	X	IVV 04				X												X	X	X				
X	X	X	X	IVV 05				X		X								X		X	X	X				
X	X	X	X	IVV 05-1				X			X							X		X	X	X				
X	X	X	X	IVV 05-2				X										X		X	X	X				
X	X	X	X	IVV 05-3				X										X		X	X	X				
X	X	X	X	IVV 06				X												X	X	X				
X	X	X	X	IVV 06-1				X												X	X	X				
X	X	X	X	IVV 07				X			X									X	X	X				
X	X	X	X	IVV 07-1				X												X	X	X				
X	X	X	X	IVV 07-3				X												X	X	X				
X	X	X	X	IVV 07-4				X												X	X	X				
X	X	X	X	IVV 08				X												X	X	X				
	X			IVV 09-1				X												X	X	X				
X	X	X		IVV 09-3				X												X	X	X				
		X		IVV 09-3-1				X												X	X	X				
		X		IVV 09-3-2				X												X	X	X				
X	X	X		IVV 09-3-3				X												X	X	X				
X	X	X		IVV 09-3-4				X												X	X	X				
X	X	X		IVV 09-3-5				X												X	X	X				
X	X	X		IVV 09-3-6				X												X	X	X				
X	X	X		IVV 09-3-7				X												X	X	X				
X	X	X		IVV 09-4				X						X						X	X	X				
	X			IVV 09-4-1				X												X	X	X				
	X			IVV 09-8				X												X	X	X				
X	X	X		IVV 10				X												X	X	X				
X	X	X	X	IVV 12				X												X	X	X		X	X	X
X	X	X	X	IVV 14				X												X	X	X		X	X	X
X	X	X	X	IVV 16				X			X							X		X	X	X				
X	X	X	X	IVV 17				X												X	X	X		X	X	X
X	X	X	X	IVV 18				X												X	X	X				
			X	IVV 19				X												X	X	X				
X	X	X	X	IVV 20				X												X	X	X				
X				IVV 20-1				X												X	X	X				
X	X	X	X	Form 1000				X		X	X							X				X				
X	X	X	X	Form 1002				X		X	X											X				
X	X	X	X	Form 1005				X		X	X							X				X		X	X	
	X			Form 1007				X		X	X							X				X				
X	X	X	X	Form 1009				X		X	X											X				
X				Form 1020				X		X	X											X				

IMS	ISO 9001:2000 Standard Requirement																							
SLPs/Work Instructions/Forms	6.0 Resource Management	6.1 Provision of Resources	6.2 Human Resources	6.2.1 General	6.2.2 Competency, Awareness, and Training	6.3 Infrastructure	6.4 Work Environment	7.0 Product Realization	7.1 Planning of Product Realization	7.2 Customer Related Process	7.2.1 Determination of Requirements Related to the Product	7.2.2 Review of Requirements Related to the Product	7.2.3 Customer Communication	7.3 Design and Development	7.3.1 Design and Development Planning	7.3.2 Design and Development Inputs	7.3.3 Design and Development Outputs	7.3.4 Design and Development Review	7.3.5 Design and Development Verification	7.3.6 Design and Development Validation	7.3.7 Control of Design and Development Changes	7.4 Purchasing	7.4.1 Purchasing Process	7.4.2 Purchasing Information	7.4.3 Verification of Purchased Product
IVV QM		X		X	X	X	X		X		X	X	X		X	X	X	X	X	X	X		X	X	X
IVV 02							X																		
IVV 02-1							X																		
IVV 04						X	X																		
IVV 05																									
IVV 05-1																									
IVV 05-2																									
IVV 05-3																									
IVV 06																							X	X	X
IVV 06-1																							X	X	X
IVV 07																							X	X	X
IVV 07-1																									
IVV 07-3																									
IVV 07-4																									
IVV 08																									
IVV 09-1									X		X	X	X												
IVV 09-3																									
IVV 09-3-1																									
IVV 09-3-2																									
IVV 09-3-3																									
IVV 09-3-4																									
IVV 09-3-5																									
IVV 09-3-6																									
IVV 09-3-7																									
IVV 09-4									X			X	X												
IVV 09-4-1													X												
IVV 09-8									X		X	X	X												
IVV 10									X						X	X	X	X	X	X	X				
IVV 12																									
IVV 14																									
IVV 16																									
IVV 17																									
IVV 18		X		X	X																				
IVV 19																									
IVV 20						X					X														
IVV 20-1						X																			
Form 1000																									
Form 1002																									
Form 1005																									
Form 1007																									
Form 1009																									
Form 1020																									

IMS	ISO 9001:2000 Standard Requirement																			
SLPs/Work Instructions/Forms	7.5 Product and Service Provision	7.5.1 Control of Production and Service Provision	7.5.2 Validation of Process for Production and Service Provision	7.5.3 Identification and Traceability	7.5.4 Customer Property	7.5.5 Preservation of Product	7.6 Control of Monitoring and Measuring Devices	8.0 Measurement, Analysis, and Improvement	8.1 General	8.2 Monitoring and Measurement	8.2.1 Customer Satisfaction	8.2.2 Internal Audit	8.2.3 Monitoring and Measurement of Processes	8.2.4 Monitoring and Measurement of Product	8.3 Control of Non-conforming Product	8.4 Analysis of Data	8.5 Improvement	8.5.1 Continual Improvement	8.5.2 Corrective Action	8.5.3 Preventive Action
IVV QM		X	X	X	X	X	X		X		X	X	X	X	X	X		X	X	X
IVV 02																				
IVV 02-1																				
IVV 04																				
IVV 05																		X		
IVV 05-1																				
IVV 05-2																		X		
IVV 05-3																		X		
IVV 06																				
IVV 06-1																				
IVV 07																				
IVV 07-1																				
IVV 07-3																				
IVV 07-4																				
IVV 08																				
IVV 09-1																				
IVV 09-3		X	X	X	X	X	X											X		
IVV 09-3-1		X	X	X	X	X	X													
IVV 09-3-2		X	X	X	X	X	X													
IVV 09-3-3		X	X	X	X	X	X													
IVV 09-3-4		X	X	X	X	X	X													
IVV 09-3-5		X	X	X	X	X	X													
IVV 09-3-6		X	X	X	X	X	X													
IVV 09-3-7		X	X	X	X	X	X													
IVV 09-4															X	X				
IVV 09-4-1																				
IVV 09-8																				
IVV 10																				
IVV 12									X		X		X	X		X		X		
IVV 14									X				X	X				X	X	X
IVV 16																				
IVV 17									X		X	X	X	X						
IVV 18																				
IVV 19																				
IVV 20																				
IVV 20-1																				
Form 1000													X					X	X	X
Form 1002																				
Form 1005													X					X	X	X
Form 1007		X	X	X			X							X						
Form 1009																				
Form 1020																				

Appendix B – IMS Document Mapping Diagram

Reference Document Mapping

SLP/WI/Forms	IVV QM	IVV 02	IVV 02-1	IVV 04	IVV 05	IVV 05-1	IVV 05-2	IVV 05-3	IVV 06	IVV 06-1	IVV 07	IVV 07-1	IVV 07-3	IVV 07-4	IVV 08	IVV 09-1	IVV 09-3	IVV 09-3-1	IVV 09-3-2	IVV 09-3-3	IVV 09-3-4	IVV 09-3-5	IVV 09-3-6	IVV 09-3-7	IVV 09-4	IVV 09-4-1	IVV 09-8	IVV 12	IVV 14	IVV 16	IVV 17	IVV 18	IVV 19	IVV 20	IVV 20-1
IVV QM		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
IVV 02			X																											X					
IVV 02-1																																			
IVV 04																																			
IVV 05	X						X	X																						X					
IVV 05-1					X																									X					
IVV 05-2					X																														
IVV 05-3					X																									X					
IVV 06										X					X															X					
IVV 06-1									X						X										X					X					
IVV 07									X	X		X			X										X					X					
IVV 07-1											X														X					X					
IVV 07-3											X														X										
IVV 07-4											X														X										
IVV 08											X						X								X		X			X					
IVV 09-1																									X					X					
IVV 09-3																		X	X	X	X	X	X	X	X					X					
IVV 09-3-1																	X						X							X					
IVV 09-3-2																	X													X					
IVV 09-3-3																	X								X					X					
IVV 09-3-4																	X		X	X										X					
IVV 09-3-5																	X							X						X					
IVV 09-3-6																	X													X					
IVV 09-3-7																	X													X					
IVV 09-4											X				X	X										X	X		X	X					
IVV 09-4-1					X																				X					X					
IVV 09-8	X															X													X	X					
IVV 10																																			
IVV 12																														X					
IVV 14	X																													X					
IVV 16																																			
IVV 17	X																												X	X		X			
IVV 18																														X					
IVV 19																														X					
IVV 20																																			
IVV 20-1																																		X	
Form 1000																																			
Form 1002																																			
Form 1005																																			
From 1007																																			
Form 1009																																			
Form 1020																																			

SLP/WI/Forms	Form 1000	Form 1002	Form 1005	Form 1007	Form 1009	Form 1020	NPD 1280.1	NPD 1440.6	NPD 2820.1C	NPD 4100.1	NPD 7120.4	NPR 1441.1	NPR 1442.1	NPR 2200.2A	NPR 5600.2	NPR 5800.1E	NPR 7120.5	NPR 7150.2	NPR 8000.4	NASA Form 1634	NASA Form 1676	NASA Federal Acquisition Regulations (FAR)	NASA Federal Acquisition Regulations Supplement (NFS)	Export Control	OSMA S/W Pgm Op Plan	OSMA L1 Program Plan	OSMA L2 Program Plan	S/W Assurance NASA Research Anouncement	NAS5-03126	NASA IV&V Implementation F	GSFC Form 25-49	IEEE Std	NASA Std 8739.8	Agency Web Requirements
IVV QM					X		X		X			X																		X				
IVV 02												X																						
IVV 02-1										X																								
IVV 04												X	X				X	X											X					
IVV 05																																		
IVV 05-1																																		
IVV 05-2												X	X																					
IVV 05-3												X	X																					
IVV 06												X			X	X						X	X											
IVV 06-1																																		
IVV 07																																		
IVV 07-1												X																						
IVV 07-3																																		
IVV 07-4																																		
IVV 08																				X		X	X											
IVV 09-1												X																						
IVV 09-3												X						X							X	X		X					X	
IVV 09-3-1												X																					X	
IVV 09-3-2																										X	X	X					X	
IVV 09-3-3												X																					X	
IVV 09-3-4																X						X											X	
IVV 09-3-5												X				X						X											X	
IVV 09-3-6												X																					X	
IVV 09-3-7														X							X			X							X		X	
IVV 09-4				X								X										X		X										
IVV 09-4-1												X	X				X		X															
IVV 09-8				X								X				X						X												
IVV 10											X						X																	
IVV 12																																		
IVV 14			X																															
IVV 16								X				X																						
IVV 17												X																						
IVV 18												X																						
IVV 19												X																						
IVV 20												X																						
IVV 20-1						X																												X
Form 1000																																		
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Form 1020																																		